(WO/2005/077430) USING **BUCKY PAPER** AS A THERAPEUTIC AID IN MEDICAL ...
The **stent** 20 in this embodiment may also be dip or spray **coated** with a coating prior to or after the **bucky paper** is adhered to the **stent**. ...
www.wipo.int/pctdb/en/wo.jsp?IA=US2004031974&DISPLAY=DESC - 46k - Cached - Similar pages

(WO/2005/117752) A **COATED** MEDICAL DEVICE AND METHOD FOR MAKING THE ...
For example, in the case of a biologically active material-**coated stent** ..... In other embodiments, the topcoating may be made of "**bucky paper**," which is a ...
www.wipo.int/pctdb/en/wo.jsp?WO=2005%2F117752&IA=WO2005%2F117752&DISPLAY=DESC - 63k - Cached - Similar pages
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Microtubes for therapeutic delivery - US Patent 7168605
"Carbon Nanotube **Bucky Paper** Scaffold for Retinal Cell Transplantation," .... "Antibody **Coated Stent** A Breakthrough in Cardiovascular Treatment," ...
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Apparatus for crimping a **stent** assembly - US Patent 7225518
A **stent** assembly comprises a rotatable sheath and a **stent**. ... including drug delivery or **coated** stents of any configuration or expansion type, ...
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Apparatus for crimping a **stent** assembly - Patent 7225518
A **stent** assembly comprises a rotatable sheath and a **stent**. ... In some embodiments a layer of "**Bucky Paper**" (a structure of carbon nanotubes) may supplement ...
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Patents: polypeptide
8404, 7070923, Provision of carbon nanotube **bucky paper** cages for immune .... a compliant elastic sheath over layer between a non-compliant **stent** e. ...
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Functional coatings and designs for medical implants invention

11 is a side view of a **coated** expandable **stent** in accord with the present ... **bucky paper** and carbides may also be used to form the meso-porous layer. ...
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Medical devices having particle-containing regions with diamond ...

See, eg, "Carbon Nanotube **Bucky Paper** Scaffold for Retinal Cell Transplantation," ... 4C-4E are cross-sectional views of a **coated** wire of the **stent** of FIGS. ...
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Bucky®: See Digital Add-On **Bucky**® (digital x-ray device). ...
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1 2 3 4 5 6 7 8 9 10 **Next**

(WO/2005/077430) USING **BUCKY PAPER** AS A THERAPEUTIC AID IN MEDICAL ...

(WO/2005/117752) A **COATED** MEDICAL DEVICE AND METHOD FOR MAKING THE ...

Microtubes for therapeutic delivery - US Patent 7168605

Apparatus for crimping a **stent** assembly - US Patent 7225518

Apparatus for crimping a **stent** assembly - Patent 7225518

Patents: polypeptide

Functional coatings and designs for medical implants invention

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MT Desk: Medical & Surgery Glossary - B
A batimastat-**coated** BiodivYsio® **stent** is currently being evaluated in clinical trials for ..... **Bucky**®: See Digital Add-On **Bucky**® (digital x-ray device). ...
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1 2 3 4 5 6 7 8 9 10 **Next**

United States Patent 7168605

Microtubes for therapeutic delivery

US Patent Issued on January 30, 2007

Inventor(s)

Steven Walak

Assignee

Boston Scientific Scimed, Inc.

Application

No. 09954179 filed on 2001-09-18

Current US Class

228/131 , 228/193 , 604/891.1

Examiners

Primary: Jonathan Johnson

Attorney, Agent or Firm

Kenyon & Kenyon LLP

US Patent References

5035711
6090363
6102933
6113722

Foreign Patent References

WO 02 060506 WO 20020800
WO 02 062968 WO 20020800

Claims

What is claimed is:

1. A method of manufacturing a medical implant comprising: supplying a plurality of microtubes; interfacing a pliant layer of microtubes with a biologically implantable medical structure; and applying a therapeutic to the pliant layer to cover a surface of one or more of the microtubes.

2. The method of claim 1 wherein interfacing the pliant layer of microtubes with a biologically implantable medical structure further comprises: enmeshing the microtubes together to form the pliant layer; and coupling the pliant layer onto a surface of the biologically implantable medical structure.

3. The method of claim 2 wherein the method of coupling the

pliant layer to a surface of a biologically implantable medical structure is one or more of diffusion bonding, metal working, sintering, brazing, plating, electrolytically attaching or welding.

4. The method of claim 1 wherein applying a therapeutic to the pliant layer further comprises: activating a vacuum force to draw therapeutic into and among the microtubes forming the pliant layer.

5. The method of claim 1 wherein applying a therapeutic to the pliant stratum further comprises: soaking the pliant layer of microtubes in a therapeutic.

6. The method of claim 1 wherein the biologically implantable medical structure is expandable from a first configuration to a second configuration.

7. The method of claim 1 wherein the biologically implantable medical structure is chosen from a group comprising: a PICC, an embolic agent, an aneurysm coil, a stent-graft, an a-v shunt, vena cava filter and an angio-catheter.

8. The method of claim 1 wherein a polymer is used to enmesh the microtubes into a pliable stratum.

9. The method of claim 1 wherein an exterior surface of the pliable layer is abraded before applying the therapeutic.

10. The method of claim 1 wherein the microtubes are uniformly shaped.

11. The method of claim 2 wherein the pliant layer is shaped as a sleeve.

12. The method of claim 1 wherein at least one of the microtubes has an open end.

13. The method of claim 1 wherein at least one of the microtubes defines a channel having a first opening and a second opening.

14. The method of claim 1 wherein at least one of the microtubes has a cross-sectional area that varies over a longitudinal length of the microtube.

15. The method of claim 1 wherein at least one of the microtubes is hollow.

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(WO/2006/052538) METHOD OF INCORPORATING CARBON **NANOTUBES** IN A ...
Nanotubes in solution may be spray **coated** and/or dip-**coated** on **stent** 12 including polymer coating 50. The solvent may be evaporated from the solution by ...
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Research Staff
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United States Patent 7168605

Microtubes for therapeutic delivery

US Patent Issued on January 30, 2007

Inventor(s)

Steven Walak

Assignee

Boston Scientific Scimed, Inc.

Application

No. 09954179 filed on 2001-09-18

Current US Class

228/131 , 228/193 , 604/891.1

Examiners

Primary: Jonathan Johnson

Attorney, Agent or Firm

Kenyon & Kenyon LLP

ABSTRACT CLAIMS DESCRIPTION FULL TEXT

Claims

What is claimed is:

1. A method of manufacturing a medical implant comprising: supplying a plurality of microtubes; interfacing a pliant layer of microtubes with a biologically implantable medical structure; and applying a therapeutic to the pliant layer to cover a surface of one or more of the microtubes.

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3. The method of claim 2 wherein the method of coupling the

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pliant layer to a surface of a biologically implantable medical structure is one or more of diffusion bonding, metal working, sintering, brazing, plating, electrolytically attaching or welding.

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United States Patent 7225518

Apparatus for crimping a stent assembly

US Patent Issued on June 5, 2007

ABSTRACT | CLAIMS | DESCRIPTION | FULL TEXT

Inventor(s)

Tracee Eidenschink
Jan Weber
Karl A. Jagger
Terry V. Brown

Assignee

Boston Scientific Scimed, Inc.

Application

No. 10784337 filed on 2004-02-23

Current US Class

Examiners

Primary: Jermie E. Cozart

Attorney, Agent or Firm

Merchant & Gould P.C.

US Patent References

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Claims

The invention claimed is:

1. A system for reducing the cross-sectional surface area of a stent assembly comprising: a stent contracting assembly, the stent contracting assembly comprising a plurality of moveable contracting members, each of the contracting members having a predetermined shape, at least one of the contracting members having a different predetermined shape than the predetermined shape of each of the other contracting members, the plurality of contracting members defining a cross-sectional surface area reduction chamber, the chamber having a reduced cross-sectional surface area configuration and a pre-reduction cross-sectional surface area configuration, the contracting assembly constructed and arranged to receive at least a portion of a stent assembly into the chamber, wherein when the chamber is in the

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pre-reduction cross-sectional surface area configuration the at least a portion of the stent assembly has a first cross-sectional surface area and when the chamber is in the reduced cross-sectional surface area configuration the at least a portion of the stent assembly has a second cross-sectional surface area, the second cross-sectional surface area being less than the first cross-sectional surface area; and a first mandrel, a portion of the first mandrel constructed and arranged to be positioned within the cross-sectional surface area reduction chamber, a first portion of the stent assembly disposed about the portion of the first mandrel; a second mandrel, a portion of the second mandrel constructed and arranged to be positioned within the cross-sectional surface area reduction chamber, a second portion of the stent assembly disposed about the portion of the second mandrel.

2. The system of claim 1 wherein the predetermined shape of the contracting members is substantially rectangular.

3. The system of claim 2 wherein a stent assembly engagement surface of the at least one of the contracting members defines a stair-step area.

4. The system of claim 2 wherein a stent assembly engagement surface of the at least one of the contracting members comprises a soft contacting region and a hard contacting region along an axis of the chamber.

5. The system of claim 1 wherein the portion of the first mandrel is expandable from an unexpanded first mandrel diameter to an expanded first mandrel diameter, the expanded first mandrel diameter being greater than the unexpanded first mandrel diameter.

6. The system of claim 5 wherein when the cross-sectional surface area reducing chamber is in the reduced cross-sectional surface area configuration, the first mandrel is positioned within the cross-sectional surface area reducing chamber and the portion of the first mandrel is expanded to the expanded first mandrel diameter.

7. The system of claim 5 wherein when the stent assembly is in the second cross-sectional surface area, the portion of the first mandrel is expanded to the expanded first mandrel diameter.

8. The system of claim 5 wherein the portion of the first mandrel comprises an expandable balloon.

Foreign Patent References

9. The system of claim 5 wherein at least the portion of the first mandrel is at least partially constructed from an electro-active

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polymer.

10. The system of claim 5 wherein at least the portion of the first mandrel is constructed from one or more layers of the group of layers consisting of: a conductive layer, a proton exchange layer, a carbon nanotube layer, an elastic layer, and any combination thereof.

11. The system of claim 1 wherein the portion of the second mandrel is expandable from an unexpanded second mandrel diameter to an expanded second mandrel diameter, the expanded second mandrel diameter being greater than the unexpanded second mandrel diameter.

12. The system of claim 11 wherein when the cross-sectional surface area reducing chamber is in the reduced cross-sectional surface area configuration, the second mandrel is positioned within the cross-sectional surface area reducing chamber and the portion of the second mandrel is expanded to the expanded second mandrel diameter.

13. The system of claim 11 wherein when the stent assembly is in the second cross-sectional surface area, the portion of the second mandrel is expanded to the expanded second mandrel diameter.

14. The system of claim 5 wherein at least the portion of the first mandrel is constructed from a plurality of layers, the plurality of layers comprising: a conductive layer, a proton exchange layer, a carbon nanotube layer and an elastic membrane layer.

15. The system of claim 11 wherein the portion of the second mandrel comprises an expandable balloon.

16. The system of claim 11 wherein at least the portion of the second mandrel is at least partially constructed from an electro-active polymer.

17. The system of claim 11 wherein at least the portion of the second mandrel is constructed from one or more layers of the group of layers consisting of: a conductive layer, a proton exchange layer, a carbon nanotube layer, an elastic layer, and any combination thereof.

18. The system of claim 11 wherein at least the portion of the second mandrel is constructed from a plurality of layers, the plurality of layers comprising: a conductive layer, a proton exchange layer, a carbon nanotube layer and an elastic membrane layer.

19. The system of claim 1 further comprising a second stent contracting assembly, the second stent contracting assembly comprising a plurality of moveable contracting members, the plurality of contracting members of the second stent contracting assembly defining a cross-sectional surface area reduction chamber of the second stent contracting assembly, the chamber of the second stent contracting assembly having a reduced cross-sectional surface area configuration and a pre-reduction cross-sectional surface area configuration, the second stent contracting assembly constructed and arranged to receive the stent assembly into the chamber, wherein when the chamber of the second stent contracting assembly is in the pre-reduction cross-sectional surface area configuration, a proximal portion of the stent assembly has a first cross-sectional surface area and when the chamber of the second stent contracting assembly is in the reduced cross-sectional surface area configuration, the proximal portion of the stent assembly has a second cross-sectional surface area, the second cross-sectional surface area being less than the first cross-sectional surface area.

20. The system of claim 19 wherein when the chamber of the second stent contracting assembly is in the pre-reduction cross-sectional surface area configuration or the reduced cross-sectional surface area configuration, the cross-sectional surface area of a distal portion of the stent assembly is substantially the same.

21. A system for reducing the cross-sectional surface area of a stent assembly comprising: a stent contracting assembly, the stent contracting assembly comprising a plurality of moveable contracting members, each of the contracting members having a predetermined shape, at least one of the contracting members having a different predetermined shape than the predetermined shape of each of the other contracting members, the plurality of contracting members defining a cross-sectional surface area reduction chamber, the chamber having a reduced cross-sectional surface area configuration and a pre-reduction cross-sectional surface area configuration, the contracting assembly constructed and arranged to receive at least a portion of a stent assembly into the chamber, wherein when the chamber is in the pre-reduction cross-sectional surface area configuration the at least a portion of the stent assembly has a first cross-sectional surface area and when the chamber is in the reduced cross-sectional surface area configuration the at least a portion of the stent assembly has a second cross-sectional surface area, the second cross-sectional surface area being less than the first cross-sectional surface area; and a protective sheath, the protective sheath constructed and arranged to be positioned within the cross-sectional surface area reduction chamber, the protective sheath disposed about the stent assembly; wherein

the protective sheath comprises a wall thickness and an inside surface, the inside surface being defined by a wall thickness pattern, the wall thickness pattern comprising alternating thicker portions of the wall thickness and thinner portions of the wall thickness, the thicker portions extending radially inward toward the stent assembly to a greater extent than the thinner portions, a thinner portion being positioned between each thicker portion.

22. The system of claim 21 wherein the protective sheath further comprises a proximal region and a distal region, the inside surface of the proximal region having a pattern of alternating thicker portions of the wall thickness and thinner portions of the wall thickness that is different than the pattern of the distal region.

23. The system of claim 22 wherein the wall thickness pattern of the proximal region of the inner surface of the protective sheath comprises a thinner portion having a greater circumferential length than each of the other thinner portions.

24. The system of claim 22 wherein the protective sheath is at least partially constructed of urethane.

25. The system of claim 24 wherein the protective sheath is formed by extrusion or injection molding.

26. The system of claim 21 wherein the inside surface of the protective sheath comprises at least one therapeutic agent, the at least one therapeutic agent constructed and arranged to be transferred to the at least a portion of the stent assembly when the chamber is in the reduced cross-sectional surface area configuration.

27. The system of claim 26 wherein the at least one therapeutic agent is at least one non-genetic therapeutic agent selected from at least one member of the group consisting of: anti-thrombogenic agents, heparin, heparin derivatives, urokinase, and PPack (dextrophenylalanine proline arginine chloromethylketone); anti-proliferative agents, enoxaprin, angiopeptin, monoclonal antibodies capable of blocking smooth muscle cell proliferation, hirudin, and acetylsalicylic acid; anti-inflammatory agents, dexamethasone, prednisolone, corticosterone, budesonide, estrogen, sulfasalazine, and mesalamine; antineoplastic/antiproliferative/anti-miotic agents, paclitaxel, 5-fluorouracil, cisplatin, vinblastine, vincristine, epothilones, endostatin, angiostatin and thymidine kinase inhibitors; anesthetic agents, lidocaine, bupivacaine and ropivacaine; anti-coagulants, D-Phe-Pro-Arg chloromethyl keton, an RGD peptide-containing compound, heparin, antithrombin compounds, platelet receptor antagonists, anti-

thrombin antibodies, anti-platelet receptor antibodies, aspirin, prostaglandin inhibitors, platelet inhibitors and tick antiplatelet peptides; vascular cell growth promoters, growth factor inhibitors, growth factor receptor antagonists, transcriptional activators, and translational promoters, vascular cell growth inhibitors, growth factor inhibitors, growth factor receptor antagonists, transcriptional repressors, translational repressors, replication inhibitors, inhibitory antibodies, antibodies directed against growth factors, bifunctional molecules consisting of a growth factor and a cytotoxin; bifunctional molecules consisting of an antibody and a cytotoxin; cholesterol-lowering agents; vasodilating agents; and agents which interfere with endogenous vascoactive mechanisms, and any combinations thereof.

28. The system of claim 26 wherein the at least one therapeutic agent is at least one genetic therapeutic agent selected from at least one member of the group consisting of: anti-sense DNA and RNA; DNA coding for anti-sense RNA, tRNA or rRNA to replace defective or deficient endogenous molecules; angiogenic factors including growth factors, acidic and basic fibroblast growth factors, vascular endothelial growth factor, epidermal growth factor, transforming growth factor α and β, platelet-derived endothelial growth factor, platelet-derived growth factor, tumor necrosis factor α, hepatocyte growth factor and insulin like growth factor; cell cycle inhibitors including CD inhibitors, thymidine kinase ("TK") and other agents useful for interfering with cell proliferation; at least one of the family of bone morphogenic proteins ("BMP's"), BMP-2, BMP-3, BMP-4, BMP-5, BMP-6 (Vgr-1), BMP-7 (OP-1), BMP-8, BMP-9, BMP-10, BMP-11, BMP-12, BMP-13, BMP-14, BMP-15, and BMP-16. Any of BMP-2, BMP-3, BMP-4, BMP-5, BMP-6 and BMP-7; dimeric proteins, homodimers, heterodimers, or combinations thereof, alone or together with other molecules; molecules capable of inducing an upstream or downstream effect of a BMP, "hedgehog" proteins, or the DNA's encoding them and any combinations thereof.

29. The system of claim 26 wherein the at least one therapeutic agent is at least one type of cellular material selected from at least one member of the group consisting of: cells of human origin (autologous or allogeneic); cells of non-human origin (xenogeneic) and any combination thereof.

30. The system of claim 29 wherein the cellular material is selected from at least one member of the group consisting of: side population cells; lineage negative cells; lineage negative $CD34^-$ cells; lineage negative $CD34^+$ cells; lineage negative $cKit.sup.+$ cells; mesenchymal stem cells; cord blood bells; cardiac or other tissue derived stem cells; whole bone marrow;

boner marrow mononuclear cells; endothelial progenitor cells; satellite cells; muscle derived cells; go cells; endothelial cells; adult cardiomyocytes; fibroblasts; smooth muscle cells; cultures of mesenchymal stem cells with 5-aza forces differentiation into cardiomyocytes; adult cardiac fibroblasts +5-aza; genetically modified cells; tissue engineered grafts; MyoD scar fibroblasts; Pacing cells; embryonic stem cell clones; embryonic stem cells; fetal or neonatal cells; immunologically masked cells; tissue engineered grafts; genetically modified cells; teratoma derived cells and any combinations thereof.

31. The system of claim 26 wherein the at least one therapeutic agent comprises at least one polymer coating, the at least one coating selected from at least one member of the group consisting of: polycarboxylic acids; cellulosic polymers, including cellulose acetate and cellulose nitrate; gelatin; polyvinylpyrrolidone; cross-linked polyvinylpyrrolidone; polyanhydrides including maleic anhydride polymers; polyamides; polyvinyl alcohols; copolymers of vinyl monomers, EVA; polyvinyl ethers; polyvinyl aromatics; polyethylene oxides; glycosaminoglycans; polysaccharides; polyesters including polyethylene terephthalate; polyacrylamides; polyethers; polyether sulfone; polycarbonate; polyalkylenes including polypropylene, polyethylene and high molecular weight polyethylene; halogenated polyalkylenes including polytetrafluoroethylene; polyurethanes; polyorthoesters; proteins; polypeptides; silicones; siloxane polymers; polylactic acid; polyglycolic acid; polycaprolactone; polyhydroxybutyrate valerate and blends and copolymers thereof; coatings from polymer dispersions, polyurethane dispersions, fibrin, collagen and derivatives thereof; polysaccharides, celluloses, starches, dextrans, alginates and derivatives; hyaluronic acid; squalene emulsions; polyacrylic acid, a copolymer of polylactic acid and polycaprolactone; medical-grade biodegradable materials, PGA-TMC, Tyrosine-Derived Polycarbonates and arylates; polycaprolactone co butyl acrylate and other co polymers; Poly-L-lactic acid blends with DL-Lactic Acid; Poly(lactic acid-co-glycolic acid); polycaprolactone co PLA; polycaprolactone co butyl acrylate and other copolymers; Tyrosine-Derived Polycarbonates and arylate; poly amino acid; polyphosphazenes; polyiminocarbonates; polydimethyltrimethylcarbonates; biodegradable CA/PO_4's; cyanoacrylate; 50/50 DLPLG; polydioxanone; polypropylene fumarate; polydepsipeptides; macromolecules, chitosan and Hydroxylpropylmethylcellulose; surface erodible material; maleic anhydride copolymers; zinc-calcium phosphate; amorphous polyanhydrides; sugar; carbohydrate; gelatin; biodegradable polymers; and polymers dissolvable in bodily fluids; A block copolymers; B block copolymers and any combinations thereof.

32. A system for reducing the diameter of a stent assembly comprising: a stent contracting assembly, the stent contracting assembly comprising a plurality of moveable contracting members, the plurality of contracting members defining a diameter reduction chamber, the chamber having a reduced diameter configuration and a pre-reduction diameter configuration, the stent contracting assembly constructed and arranged to receive the stent assembly into the chamber, wherein when the chamber of the stent contracting assembly is in the pre-reduction diameter configuration at least a portion of the stent assembly has a first diameter and when the chamber is in the reduced diameter configuration the at least a portion of the stent assembly has a second diameter, the second diameter being less than the first diameter; a first mandrel, a portion of the first mandrel constructed and arranged to be positioned within the diameter reduction chamber, a first portion of the stent assembly disposed about the portion of the first mandrel; and a protective sheath, the protective sheath constructed and arranged to be positioned within the diameter reduction chamber, the protective sheath disposed about the stent assembly, the protective sheath having a wall thickness and an inside surface, the inside surface being defined by a wall thickness pattern, the wall thickness pattern comprising alternating thicker portions of the wall thickness and thinner portions of the wall thickness, the thicker portions extending radially inward toward the stent assembly to a greater extent than the thinner portions, a thinner portion being positioned between each thicker portion.

33. The system of claim 32 further comprising a second mandrel, a portion of the second mandrel constructed and arranged to be positioned within the diameter reduction chamber, a second portion of the stent assembly disposed about the portion of the second mandrel.

34. A system for reducing the cross-sectional surface area of a stent assembly comprising: a stent contracting assembly, the stent contracting assembly comprising a plurality of moveable contracting members, each of the contracting members having an elongate edge with a predetermined shape, at least one of the contracting members having a different elongate edge predetermined shape than the elongate edge predetermined shape of each of the other contracting members, the elongate edges of the plurality of contracting members defining a contracting chamber, the contracting chamber having a first cross-sectional shape along a portion of a length of the contracting chamber and a second cross-sectional shape along another portion of the length of the contracting chamber, the first cross-sectional shape having a stepped shape area along only a portion of a circumference of the contracting chamber,

the contracting assembly constructed and arranged to receive at least a portion of a stent assembly into the chamber.

35. The system of claim 34 wherein the first cross-sectional shape is generally circular and the second cross-sectional shape is generally ellipsoid shaped.

36. The system of claim 34 wherein the elongate edge predetermined shape of the at least one of the contracting members defines a stair-step shape.

37. The system of claim 34 further comprising a first mandrel, a portion of the first mandrel constructed and arranged to be positioned within the reduction chamber, a first portion of the stent assembly disposed about the portion of the first mandrel.

38. The system of claim 37 wherein the portion of the first mandrel is expandable from an unexpanded first mandrel diameter to an expanded first mandrel diameter, the expanded first mandrel diameter being greater than the unexpanded first mandrel diameter.

39. The system of claim 38 further comprising a second mandrel, a portion of the second mandrel constructed and arranged to be positioned within the reduction chamber, a second portion of the stent assembly disposed about the portion of the second mandrel.

40. The system of claim 39 wherein the portion of the second mandrel is expandable from an unexpanded second mandrel diameter to an expanded second mandrel diameter, the expanded second mandrel diameter being greater than the unexpanded second mandrel diameter.

41. The system of claim 39 wherein the portion of the second mandrel comprises an expandable balloon.

42. The system of claim 39 wherein at least the portion of the second mandrel is at least partially constructed from an electro-active polymer.

43. The system of claim 37 wherein the portion of the first mandrel comprises an expandable balloon.

44. The system of claim 37 wherein at least the portion of the first mandrel is at least partially constructed from an electro-active polymer.

45. A system for reducing the cross-sectional surface area of a stent assembly comprising: a stent contracting assembly, the

stent contracting assembly comprising a plurality of moveable contracting members, each of the contracting members having a predetermined shape, at least one of the contracting members having a different predetermined shape than the predetermined shape of each of the other contracting members, the plurality of contracting members defining a cross-sectional surface area reduction chamber, the chamber having a reduced cross-sectional surface area configuration and a pre-reduction cross-sectional surface area configuration, the contracting assembly constructed and arranged to receive at least a portion of a stent assembly into the chamber, wherein when the chamber is in the pre-reduction cross-sectional surface area configuration the at least a portion of the stent assembly has a first cross-sectional surface area and when the chamber is in the reduced cross-sectional surface area configuration the at least a portion of the stent assembly has a second cross-sectional surface area, the second cross-sectional surface area being less than the first cross-sectional surface area; a first mandrel, a portion of the first mandrel constructed and arranged to be positioned within the cross-sectional surface area reduction chamber, a first portion of the stent assembly disposed about the portion of the first mandrel and a second stent contracting assembly, the second stent contracting assembly comprising a plurality of moveable contracting members, the plurality of contracting members of the second stent contracting assembly defining a cross-sectional surface area reduction chamber of the second stent contracting assembly, the chamber of the second stent contracting assembly having a reduced cross-sectional surface area configuration and a pre-reduction cross-sectional surface area configuration, the second stent contracting assembly constructed and arranged to receive the stent assembly into the chamber, wherein when the chamber of the second stent contracting assembly is in the pre-reduction cross-sectional surface area configuration, a proximal portion of the stent assembly has a first cross-sectional surface area and when the chamber of the second stent contracting assembly is in the reduced cross-sectional surface area configuration, the proximal portion of the stent assembly has a second cross-sectional surface area, the second cross-sectional surface area being less than the first cross-sectional surface area.

46. The system of claim 45 wherein when the chamber of the second stent contracting assembly is in the pre-reduction cross-sectional surface area configuration or the reduced cross-sectional surface area configuration, the cross-sectional surface area of a distal portion of the stent assembly is substantially the same.

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